INITIAL REVIEW ENGINEERING REPORT [redacted]
LVE: 19-0033

Post-Focus Draft Revision 1 6/6/2019
ENGINEER: El-Zoobi/RT \ SL
PV (kg/yr): [redacted] Import Only
Revision Notes / Assessment Overview: RT Reviised 06/06/2019. Case is revised, based on additional information from submitter| 1. Incineration is removed from media of release, most of the release are to landfill| 2. Eliminated releases from disposal of [redacted].| 3. Under USE 1: [redacted] ([redacted] of PV)| • Updated IRER for release/exposure days to [redacted] d/yr.| • Updated perticulate exposure using their monitoring data [redacted] and [redacted] mg/m3.| 4. Under USE 2: [redacted] ([redacted] of PV)| • Updated IRER for exposure time to [redacted] hr./day| • Updated perticulate exposure using their monitoring data [redacted] and [redacted] mg/m3.| 5. Under USE 3: [redacted] ([redacted] of PV)| • Updated IRER for release/exposure days to [redacted]d/yr.| • Assessed inhalation to mist|

SUBMITTER: [redacted]
USE: Intended use: [redacted] ([redacted] and [redacted] [redacted] ([redacted]
Analogues (same use): [redacted]
Patents (same use): None.

OTHER USES: Analogues (other uses): [redacted]
Analogues (same + other uses): None.
Patents (other use): None.

MSDS: Yes Label: Yes

[redacted]

AM

CRSS (12/03/2018):
Chemical Name: [redacted]

S-H20: 1E-06 g/L @
VP: 1.0E-6 torr @
MW: [redacted] [redacted]<500 [redacted]<1000
Physical State and Misc CRSS Info:
Neat: [redacted] Mfg: NK: Imported Proc/Form: Solid: avg. [redacted] or Solution: [redacted] End Use: Solid: [redacted]
Submitted data: [redacted] MP = 71-73 °C; decomposes > 200 °C; practically insoluble in water; density = 1.09 g/cc.
EPI estimated data (input MP = 71 °C), SMILES: [redacted] BP = 409 °C; VP = 1.88E-6 torr; WS = 1.61E-12 g/L; log P = 13.34.
ACD Labs estimated data: BP = 495 °C; VP < 0.000001 g/L; WS = 3.6E-11; log P = 14.29.

Consumer Use: [redacted]
SAT (concerns) (12/04/2018):
Related Cases and Misc SAT Info:
Same as [redacted].
Analogues: [redacted]
Migration to groundwater: 2;4 PMN;Deg Pdt [redacted]
PBT rating: P3B0T0
Health: 2 Drinking Water, Inhalation, Other
Eco: 1 Water (All releases to water with a CC = 170 ppb)

AM

OCCUPATIONAL EXPOSURE RATING: [redacted]

NOTES & KEY ASSUMPTIONS:
Occupational exposure and environmental releases were estimated using the 9/30/2013 version of ChemSTEER tool. Input to ChemSTEER tool includes information from: the PMN submission, physical / chemical properties, and relevant past cases. This LVE is [redacted] for consumer use; therefore, only [redacted] of the PV is assessed. This LVE is assessed in consistent manner as same submitter, same use cases [redacted] This LVE is imported only; therefore, MFG is not assesed. SAT concerns are for inhalation and drinking water exposures. All releases to water (cc = 170 ppb). /// The assumptions in this IRER are generally consistent with past cases except this IRER assesses an additional USE operation for application of [redacted] per information in the submission.

POLLUTION PREVENTION CONSIDERATIONS:

AM

AM

P2 Claim: [redacted]

AM

AM

[redacted]

EXPOSURE-BASED REVIEW: [redacted]

AM

AM

INITIAL REVIEW ENGINEERING REPORT [redacted]

LVE: 19-0033

PROC: [redacted] Disposal

Number of Sites/ Location: [redacted]

[redacted]

Days/yr: [redacted]

Basis: The submission estimates [redacted] exposure days/yr, and LVE concentration of [redacted] CS calculates [redacted] kg/day.

Process Description: [redacted] (per submission and CRSS)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

Note, the submission states, "No exposure to the NCS is expected for workers at this facility, and no manufacturing occurs at this facility. ...The amount anticipated for disposal [redacted] is presented in the [redacted] attachment, at [redacted] of annual import volume."

Landfill
Output 2: 0.0E+0 kg/site-day over [redacted] days/yr from [redacted]
or 0.0E+0 kg/site-yr from [redacted] or 0.0E+0 kg/yr-all sites
to: Landfill (per submission)
from: Unsold Stock Disposal
basis: Per the amended information, submitter claims that No amount of LVE will be disposed from warehouse, all the imported LVE will be distributed to customers. IRER updated with LF =0. CS does not allow LF to be zero hence changed amount of use to 0, for releases to be 0.

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis:

AM

Inhalation:

Inhalation exposures not expected, containers remain unopened.

Dermal:

Dermal exposures not expected, containers remain unopened.

AM

INITIAL REVIEW ENGINEERING REPORT [redacted]

LVE: 19-0033

USE 1: [redacted] ([redacted] of PV)

Number of Sites/ Location: [redacted]

unknown site(s)

Days/yr: [redacted]

Basis: Submission estimates [redacted] of the PV is used as a [redacted] and [redacted] used for consumer uses; therefore, RAD assesses [redacted] of PV for [redacted] applications with a [redacted]/[redacted] split (or [redacted] each) between [redacted] uses (per attachment [redacted]", approx. [redacted]. Submission estimates [redacted] sites for both [redacted] use, but does not specify a split. RAD assumes a [redacted] split resulting in [redacted] [redacted] application sites. Submission estimates [redacted] days / year. CS calculates [redacted] kg/site-day

Process Description: [redacted] (per CRSS, submission, and same use cases [redacted])

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

AM

Water or Air
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: water or air (per submission releases on [redacted])
from: [redacted]
basis: User-Defined Loss Rate Model. Submission estimates that of the [redacted] remaining in the [redacted] approximately [redacted] is lost during [redacted] and the other [redacted] is left on the [redacted] to be removed prior to application of [redacted] Submission for past case [redacted] states, [redacted] [redacted] . [redacted]

Air
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Air (model)
from: [redacted]

AM

basis: EPA/OPPT Penetration Model. [redacted] Submitter attachment [redacted] estimates [redacted] have an area of [redacted] cm2 and [redacted] have an area of [redacted] cm2. RAD conservatively assumes all applications are on [redacted] to maximize evaporation area. "Product Application" attachment recommends to perform [redacted]. Technical contact for [redacted] estimated the [redacted] for approximately [redacted] minutes. RAD assumes a total of [redacted] sec ([redacted] min) for application, [redacted] min for [redacted] and [redacted] min for [redacted] resulting in a total application time of [redacted] min/application and there are [redacted] applications per day for a total operating time of [redacted] min ([redacted] hr). The product label attachment recommends applying the [redacted] at [redacted] The VP at the noted elevated tempearture is estimated to be [redacted] torr. RAD assesses a weighted average VP as: ([redacted] torr (VP at application temp) x [redacted] + [redacted] torr (VP at avg temp between application temp and room temp) x [redacted] min + [redacted] torr (VP at room temp) x [redacted] min) / [redacted] = [redacted] torr. RAD applies a vapor correction factor of [redacted] based on the mass fraction of LVE in the [redacted] Per amended information, submitter estimates exposure frequency of [redacted] days /yr, and an exposure duration of [redacted] hours per day. Exposure duration [redacted] hr./day, is close to original estimated by RAD.

Landfill
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Landfill per amended information from submitter
from: [redacted]
basis: User-Defined Loss Rate Model. Submission estimates that only [redacted] of the [redacted] [redacted] With amended information, submitter claims " [redacted]. Submission provided estimates of spent [redacted] is [redacted] kg/yr which is more than assessed PV of this LVE. Hence RAD assess at [redacted] kg/yr binding with updated [redacted] day/yr from submitter

Landfill
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Lanfill Per amended information from submitter
from: [redacted]

AM

basis: User-Defined Loss Rate Model. Submission estimates that of the [redacted]. [redacted] Per amended information media of release changed to landfill

RELEASE TOTAL
[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis:

AM

Inhalation:

Exposure to Vapor (non-volatile) (Class II)
Typical:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Worst Case:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with inhalation exposure: [redacted]
Basis: [redacted]; EPA/OPPT Mass Balance Model. RAD assumes a default of [redacted] workers/site-day. Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years). //// Concentration: Cm = [redacted] (typical) to [redacted] (worst case) mg/m3; Updated exposure duration: h = [redacted] hr/day per amended information from submitter.

NOTE: The respirator class is: II. Gas/vapor (all substances in the gas form).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	No
	OR	
b)	Hazard Rating for health of 2 or greater? 2	Yes

=> Inhalation Monitoring Data Desired? **No**

Exposure to Particulate (non-volatile) (Class I)
Respirable:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Inhalable:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr

AM

Number of workers (all sites) with inhalation exposure: [redacted]

Basis: Worker Exposure to Particulates During Application; User-defined Inhalation Model. Generation of particulate expected during [redacted] application. RAD updated estimation based on additional information from submitter, exposure duration [redacted] hr/day, [redacted] day/yr, [redacted] Accounting for the concentration of the LVE, [redacted] (respirable) and [redacted] (inhalable).. //// Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years). ////

NOTE: The respirator class is: I. Particulate (including solid or liquid droplets).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	No
	OR	
b)	Hazard Rating for health of 2 or greater? 2	Yes

=> Inhalation Monitoring Data Desired? **No**

Dermal:

Per [redacted]: [redacted]

AM

INITIAL REVIEW ENGINEERING REPORT [redacted]

LVE: 19-0033

USE 2: [redacted] ([redacted] of PV)

Number of Sites/ Location: [redacted]

unknown site(s)

Days/yr: [redacted]

Basis: Submission estimates [redacted] of the PV is used as a [redacted] and [redacted] used for consumer uses; therefore, RAD assesses [redacted] of PV for [redacted] applications with a [redacted] split (or [redacted] each) between expert and commercial uses (per attachment "Perflourinated materials in [redacted]", approx. [redacted] Submission estimates [redacted] sites for both [redacted] use, but does not specify a split. RAD assumes a [redacted] split resulting in [redacted] application sites. Submission for past case [redacted] estimates [redacted] applications/site-yr. CS calculates [redacted] kg/site-day

Process Description: [redacted] (per CRSS, submission, and same submitter, same use case [redacted]

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

AM

Water or Air
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: water or air (per submission releases on [redacted])
from: [redacted] Loss to Environment
basis: User-Defined Loss Rate Model. Submission estimates [redacted] Submission states, "[redacted]" RAD assesses the release to water or air. [redacted]

Air
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Air (model)
from: [redacted]
basis: EPA/OPPT Penetration Model. [redacted] is applied at elevated temperature which may result in volatilization of LVE. Submitter attachment [redacted] estimates [redacted] RAD conservatively assumes all applications are on [redacted] to maximize evaporation area. The product label attachment recommends applying the [redacted] at [redacted] The VP at the noted elevated temperature is estimated to be [redacted] torr. RAD assesses a weighted average VP as: ([redacted] torr (VP at application temp) x [redacted] + [redacted] torr (VP at avg temp between application temp and room temp) x [redacted] min + [redacted] torr (VP at room temp) x [redacted] min) / [redacted]min = [redacted] torr. RAD applies a vapor correction factor of 0.014 based on the mass fraction of LVE in the [redacted] Exposure duration updated per additional information from submitter to [redacted] min/day.

Landfill
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Landfill per amended submission
from: [redacted]

AM

basis: User-Defined Loss Rate Model. Submission estimates that only [redacted]. Update with amended information, submitter claims " [redacted] Submission provided estimates of [redacted] kg/yr which is more than assessed PV of this LVE. Hence RAD assess at [redacted] kg/yr binding

Landfill
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Landfill per amended information
from: [redacted]
basis: User-Defined Loss Rate Model. Submission estimates that of the [redacted]. [redacted] [redacted] Updated, with amended information, submitter claims [redacted]

RELEASE TOTAL
[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis:

AM

Inhalation:

Exposure to Vapor (non-volatile) (Class II)
Typical:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Worst Case:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with inhalation exposure: [redacted]
Basis: [redacted] EPA/OPPT Mass Balance Model. //// Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years). //// Concentration: Cm = 0.00098 (typical) to 0.0295 (worst case) mg/m3; Exposure duration updated per additional information from submitter to [redacted] min/day.

NOTE: The respirator class is: II. Gas/vapor (all substances in the gas form).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	No
	OR	
b)	Hazard Rating for health of 2 or greater? 2	Yes

=> Inhalation Monitoring Data Desired? **No**

Exposure to Particulate (non-volatile) (Class I)
Respirable Particulate:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Inhalable Particulate:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr

AM

Number of workers (all sites) with inhalation exposure: [redacted]

Basis: Worker Exposure to Particulates During Application; User-defined Inhalation Model. RAD expects generation of particulate during [redacted] application. Per amended information, based on results of study [redacted] conc. of respirable particle changed to [redacted] and [redacted] for inhalable, Submitter suggests [redacted] min for Exposure time i.e. [redacted] hr/day. Accounting for the concentration of the LVE, Cm = [redacted] //// Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years). ////

NOTE: The respirator class is: I. Particulate (including solid or liquid droplets).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	No
	OR	
b)	Hazard Rating for health of 2 or greater? 2	Yes

=> Inhalation Monitoring Data Desired? **No**

Dermal:

Per [redacted]

AM

INITIAL REVIEW ENGINEERING REPORT [redacted]

LVE: 19-0033

USE 3: [redacted] ([redacted] of PV)

Number of Sites/ Location: [redacted]

unknown site(s)

Days/yr: [redacted]

Basis: Submitter indicates the primary commerical use for this product is [redacted] therefore, RAD assesses the entire PV for this use as [redacted] applications. Similar to USE 1, RAD asseses [redacted] sites and [redacted] days/yr (per submitter amended). CS calculates [redacted] kg/site-day. Updated wt fraction of chemical to [redacted] per submission

Process Description: [redacted] (per submission)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

AM

Water or Air or Landfill
Output 2: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Uncertain
from: [redacted]
basis: User-Defined Loss Rate Model. Submitter indicates [redacted], [redacted] RAD assesses to uncertain media (including air due to [redacted]). Updated release days to [redacted] day/ yr from amended information.

Landfill
High End: [redacted] kg/site-day over [redacted] days/yr from [redacted] sites
or [redacted] kg/site-yr from [redacted] sites or [redacted] kg/yr-all sites
to: Landfill per amended information
from: Cleaning Liquid Residuals from Bottles Used to Transport the Raw Material
basis: EPA/OPPT Small Container Residual Model, CEB standard 0.6% residual. RAD assumes use of small containers based on the [redacted] PV for this use. Submitter does not specify media for it but it is assumed same as submitter specified for [redacted]. Estimation updated based on recent information from submitter [redacted] day/ yr for this use.

RELEASE TOTAL
[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis:

AM

Inhalation:

Exposure to Mist (non-volatile) (Class I)
Spray Mist:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with inhalation exposure: [redacted]

Basis: [redacted]; User-defined Inhalation Model. Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years). /// Submiter refrences [redacted] where [redacted] Submission specifies that [redacted] is taken to represent exposure concentration for this product, since on [redacted] it is mentined that [redacted] product contains [redacted]. This conc is adjusted for the conc of NCS ([redacted] Submiter suggest exposure duration is [redacted] hrs / day from amended information ([redacted] min exposure) but number of application per day are not specified. Hence, defaults worktime of 8 hr/day is used. Exposure days are updated per new information from submiter to [redacted] day/yr.

NOTE: The respirator class is: I. Particulate (including solid or liquid droplets).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	Yes
	OR	
b)	Hazard Rating for health of 2 or greater? 2	Yes

=> Inhalation Monitoring Data Desired? **No**

Dermal:

AM

Exposure to Liquid at 1.00% concentration
High End:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with dermal exposure: [redacted]
Basis: [redacted]; [redacted] EPA/OPPT 2-Hand Dermal Contact with Liquids Model. Per November 2016 RAD guidance, default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years.

AM

CBI: No

MEMORANDUM of TELEPHONE CONVERSATION (Contains No TSCA CBI)

CALL BY:
Organization:

CALL TO:

Organization:

Date:

Time:

Phone:

Concerning what?

LVE: 19-0033

AM